



## CTSO Course Alignments: STEM IV Practicum

Below you will find standards for the STEM IV Practicum course aligned with competitive events from appropriate career and technical student organizations (CTSOs). Knowing the aligned events for your organization will allow you to have additional tools for teaching course standards, as well as increase student engagement and preparation in your CTSO activities. The final column recommends potential tools from other CTSO organizations. Even if your students are not participating in these organizations, available rubrics, tools, and materials can also add to the instructional resources at your disposal for best teaching your content.

**Important to note:** While the aligned activities below can be important tools in teaching course standards, it is important to note that events may not cover a standard in its entirety and should not be the sole instructional strategy used to address a standard.

	STANDARD	ALIGNED TSA COMPETITIVE EVENTS/PROGRAMS	OTHER POTENTIAL CTSO TOOLS & RESOURCES
1	Accurately read and interpret safety rules, including but not limited to rules published by the National Science Teachers Association (NSTA), rules pertaining to electrical safety, Occupational Safety and Health Administration (OSHA) guidelines, and state and national code requirements. Be able to distinguish between the rules and explain why certain rules apply. (TN Reading 3, 4, 6)		<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Mechanics and Technology</li> <li>• <b>SkillsUSA:</b> Occupational Health and Safety</li> </ul>
2	Identify and explain the intended use of safety equipment available in the classroom. For example, demonstrate how to properly inspect, use, and maintain safe operating procedures with tools and equipment. Incorporate safety procedures and complete safety test with 100 percent accuracy. (TN Reading 3, 4)		<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Mechanics and Technology</li> <li>• <b>SkillsUSA:</b> Occupational Health and Safety</li> </ul>

3	<p>Research and select a company or organization for a work-based learning project in a STEM area of choice. Cite specific textual evidence from the organization's literature as well as independent news articles to summarize:</p> <ol style="list-style-type: none"> <li>The mission and history of the organization</li> <li>Headquarters and organizational structure</li> <li>Products or services provided</li> <li>Credentials required for employment and how they are obtained and maintained</li> <li>Policies and procedures</li> <li>Reports, newsletters, and other documents published by the organization</li> <li>Website and contact information</li> </ol> <p>(TN Reading 1, 2; TN Writing 7)</p>		<ul style="list-style-type: none"> <li>• <b>SkillsUSA:</b> Job Interview, Employment Application Process, Entrepreneurship</li> <li>• <b>FCCLA:</b> Job Interview, Career Investigation, Entrepreneurship</li> </ul>
4	<p>Search for the resumes and curricula vitae (CVs) of scientists, engineers, and researchers retrieved from the websites of institutions, organizations, or professional networks. Discuss what is typically included in the resumes and CVs of STEM professionals, compare and contrast several examples, and create a personal resume or curriculum vitae modeled after elements identified in the search. (TN Reading 1, 4, 6, 9; TN Writing 4)</p>		<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Electronic Career Portfolio</li> </ul>
5	<p>Conduct a job search and simulate the experience by researching local employment options. In preparation for a future career in STEM, complete an authentic job application form and compose a cover letter following guidelines specified in the vacancy announcement. (TN Reading 5, 7; TN Writing 4)</p>		<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Job Interview</li> <li>• <b>FCCLA:</b> Job Interview, Career Investigation, Entrepreneurship</li> <li>• <b>SkillsUSA:</b> Job Interview, Employment Application Process, Entrepreneurship</li> </ul>
6	<p>Participate in a mock interview. Prior to the interview, prepare a paper that includes the following: tips on dress and grooming, most commonly asked interview questions, appropriate conduct during an interview, and recommended follow-up procedures. Upon completion of the interview, write a thank you letter to the interviewer in a written or email format. (TN Reading 2; TN Writing 2, 4, 7, 9)</p>		<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Job Interview, Career Investigation, Entrepreneurship</li> <li>• <b>FFA:</b> Job Interview</li> <li>• <b>SkillsUSA:</b> Job Interview, Employment Application Process, Entrepreneurship</li> </ul>
7	<p>Collect codes of ethics from various professions related to the STEM area of choice, such as the National Society of Professional Engineers (NSPE) Code of Ethics for Engineers and the American Society for Clinical Laboratory Science (ASCL) Code of Ethics. Participate in a class discussion on the significance of following ethical standards in the STEM fields. Synthesize principles from the codes investigated to create a personal code of ethics related to a STEM area of choice. (TN Reading 1, 2, 6; TN Writing 4, 9)</p>		

8	<p>Apply skills and knowledge from previous courses in an authentic work-based learning internship, job shadow, or classroom-based project. Where appropriate, develop, practice, and demonstrate skills outlined from previous courses.</p>		<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Job Interview, Career Investigation, Entrepreneurship</li> <li>• <b>SkillsUSA:</b> Job Interview, Employment Application Process, Entrepreneurship</li> </ul>
9	<p>Create and continually update a personal journal to document the practicum and draw connections between the experience and previous course content by reflecting on:</p> <ol style="list-style-type: none"> <li>Tasks accomplished and activities implemented</li> <li>Positive and negative aspects of the experience</li> <li>How challenges were addressed</li> <li>Team participation in a learning environment</li> <li>Comparisons and contrasts between classroom and work environments</li> <li>Interactions with colleagues and supervisors</li> <li>Personal career development</li> <li>Personal satisfaction</li> </ol> <p>(TN Writing 2, 4)</p>		
10	<p>Create a portfolio, or similar collection of work, that illustrates mastery of skills and knowledge outlined in the previous courses and applied in the practicum. The portfolio should reflect thoughtful assessment and evaluation of the progression of work involving the application of steps of the scientific inquiry or the engineering design process (depending on the nature of the work-based learning project). The following documents will reside in the career portfolio:</p> <ol style="list-style-type: none"> <li>Personal code of ethics</li> <li>Career and professional development plan</li> <li>Resume or Curriculum Vitae</li> <li>List of responsibilities undertaken through the course</li> <li>Examples of visual materials developed and used during the course (such as graphics, drawings, models, presentation slides, videos, and demonstrations)</li> <li>Description of technology used, with examples if appropriate</li> <li>Periodic journal entries reflecting on tasks and activities</li> <li>Feedback from instructor and/or supervisor based on observations</li> </ol> <p>(TN Reading 7; TN Writing 4)</p>		<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Electronic Career Portfolio</li> <li>• <b>FFA:</b> Job Interview</li> </ul>
11	<p>Apply all steps of the scientific inquiry or the engineering design process (depending on the nature of the project) to successfully generate a hypothesis or prototype, collect the relevant data, perform the necessary tests, interpret the results, make modifications to models or prototypes, and communicate results over the course of the project's duration. Produce a technical report documenting the findings of the project and justifying the final conclusions based on evidence obtained. (TN Reading 1, 2, 3, 4, 5, 7, 8, 9; TN Writing 1, 5, 6, 7, 8, 9)</p>	<ul style="list-style-type: none"> <li>• <b>TSA:</b> CNC Production, Engineering Design, Manufacturing Prototype</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agriscience Fair</li> </ul>

12	<p>Upon completion of the practicum, develop a technology-enhanced presentation showcasing highlights, challenges, and lessons learned from the experience. The presentation should be delivered orally, but supported by relevant graphic illustrations, such as diagrams, drawings, and models of project findings, and/or physical artifacts that represent the outcome of the project (i.e., a prototype or 3-D model). Prepare the presentation in a format that could be presented to both a technical and a non-technical audience, as well as for a career and technical student organization (CTSO) competitive event. (TN Reading 1, 3, 7, 9; TN Writing 2, 4, 5, 6, 9)</p>	<ul style="list-style-type: none"> <li>• <b>TSA:</b> Prepared Presentation, Desktop Publishing, Promotional Graphics, CNC Production, Engineering Design, Manufacturing Prototype</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Electronic Career Portfolio</li> <li>• <b>HOSA:</b> Prepared Speaking</li> </ul>
ALL	<p><b>CAN BE USED WITH ALL/MOST STANDARDS</b></p>	<ul style="list-style-type: none"> <li>• <b>TSA:</b> Career Preparation</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Illustrated Talk, Career Investigation, Chapter in Review Display, Chapter in Review Portfolio, National Programs in Action</li> <li>• <b>HOSA:</b> Job Seeking Skills</li> <li>• <b>SkillsUSA:</b> Career Pathways Showcase, Job Skills Demonstration A, Job Skills Demonstration O, Prepared Speech, Extemporaneous Speaking, Chapter Display</li> </ul>